Uplands Junior School

Mathematics Policy

April 2022

This policy been written in conjunction with the UN convention on the rights of the child: article 2 non-discrimination, article 3 best interest of the child, article 13 finding out and sharing information, and article 28/29 goals of education.

Maths Overview

At Uplands Junior School, Mathematics is a fundamental part of each day. We believe that Maths teaches us how to make sense of the world around us. We aim to provide children with the skills in order to develop the ability to calculate, to communicate, to reason and to solve problems. This enables children to explore, understand, and appreciate relationships and patterns in both number and shape in their everyday life. Under our "Respect For All" ethos, we believe all children can achieve in mathematics. We wish to promote enjoyment and enthusiasm for learning through practical activity, cross-curricular learning, exploration and discussion. We aim to promote confidence, resilience and competence with numbers and the number system through children working hard and pushing themselves to achieve.

Maths Intent

We deliver the programme of study that meet the requirements of the National Curriculum 2014. We offer progression within fluency, reasoning and problem solving and in turn aim for children to become true masters of content, applying and being creative with new knowledge in multiple ways. We provide opportunities for children to challenge themselves, to develop communication skills, independence and co-operation when solving problems in order to take responsibility for their learning. This in turn will equip children with learning behaviours that will support them into their adult life.

Key mathematical skills and knowledge are taught in the daily lesson and every effort is made to link mathematics with other areas of the curriculum. Mathematical possibilities are identified across the links between mathematics and other curricular work are made so children see that mathematics is not an isolated subject.

Maths vocabulary is used in the correct way in order to develop children's knowledge. Children are encouraged to use the correct mathematical language and terminology to discuss their mathematics and to explain their reasoning.

Maths Implementation

To provide adequate time for developing maths skills, each year group will provide a daily maths lesson. Lessons are taught with a balance between whole class work, group teaching, practical tasks and individual practice to encourage mathematical talk, support and independence. Maths lessons are taught in order to teach for secure and deep understanding of mathematical concepts. This is delivered in small, manageable steps. 'Cold Task' assessments are completed before the start of each unit. From this, staff will identify any gaps in learning and any opportunities for pre-filling knowledge. Teachers use the

outcomes of cold tasks to produce a weekly plan that states objectives which will be covered in each lesson and gives details of how they are going to be taught. These 'small step' are planned using the White Rose resources. White Rose blocks have been adapted and moved to different points within the term and some units have been speared into smaller blocks of learning. This is to provide time for reflection and revision of previous learning, as well as engaging children with a variety of topics over a term.

All children work within mixed ability class groups. Pupils are seated in mixed ability groups; however, teachers may group children by ability if they feel it best suits the needs of the children within that lesson. A typical lesson will include the following elements: pre-filling – addressing misconceptions, identifying prior learning links with new learning and introducing key vocabulary; main teaching activity including progression in fluency, reasoning and problem solving tasks. Independent tasks are set for all children to access. A scaffold is provided for children who may need support (e.g teacher/TA support, use of apparatus, smaller steps). Challenge tasks are set each day to stretch and apply thinking in a variety of contexts. These challenges are placed in 'Challenge Boxes' within classrooms.

There are opportunities outside of the main lesson for children to revisit and revise prior learning. 'Morning Maths Skills sheets' are used as children arrive during registration time. These tasks include questions covering all topic areas of the maths curriculum that have already been taught. Mental maths sessions are also planned to cover oral work and mental/arithmetic calculations – this will involve the whole class in tasks which again aim to revisit and revise previous learning. These sessions are planned at some point during the teaching day according to year group timetables.

<u>Maths Impact</u>

By implementing the intent, children should be confident in the following areas:

- being fluent in the fundamentals of mathematics so that they develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- solving problems by applying their mathematics to a variety of problems with increasing sophistication, including in unfamiliar contexts and to model real-life scenarios
- reasoning mathematically by following a line of enquiry and develop and present a justification, argument or proof using mathematical language.
- having an appreciation of number and number operations, which enables mental calculations and written procedures to be performed efficiently, fluently and accurately to be successful in mathematics.

The assessment of maths is through a 'cold and hot task' process for units of work followed by medium and long term assessments. Wolverhampton baseline/midline/endline assessments are used for teachers to identify elements in children's independent work judging them as working towards, expected and greater depth within their current year group. Throughout the cycle the teacher will be responding to children's work providing praise, support, encouragement and future thinking points to move their work forward.

It is the role of the maths champion to ensure continuity and progression across the whole school. This is carried out through the following opportunities: book trawls, learning walks, pupil voice and moderation meetings (both in school and with LA schools). Pupils progress meetings are also held within team meetings on a regular basis and middle managers report to SLT. This information is used by the maths subject leader to amend any intervention groups and ensure that those children who are not working at age related expectations are provided with the support they need.

Curriculum Planning

A Typical Lesson – the information below serves only as a guide.

- **Oral work and mental calculations** – this will involve the whole class in tasks which aim to revisit and revise previous learning, rehearse, sharpen and develop mental and oral skills.
- **Pre-filling** - Misconceptions that are identified before the lesson are addressed. This may be from cold task activities. Links are made to other curriculum areas and key vocabulary is discussed.
- **Main teaching activity** – this includes the teachers input and pupil activities, during this time expectations and success criteria will be shared. (see objective coverage below).
- **Plenary** – this will usually happen at the end of the lesson but a teacher may use 'mini plenaries' during the lesson if any misconceptions have been identified. At the end of the lesson, the learning will be reviewed by the teacher and children.

When planning for objective coverage, teachers are expected to take the following strategies into account:

- Small steps
- Implementing the Concrete, Pictorial and Abstract (CPA) approach to introducing, exploring and applying mathematical concepts where appropriate
- Applying/using the Bar Model approach as a strategy to approach calculation/problems
- Considering key questions and mathematical vocabulary at the point of unit planning
- Multiple opportunities for verbal and written/drawn reasoning (explaining and using mathematical vocabulary to explain methods or reasoning) within unit exploration
- Inclusion of relevant problem-solving opportunities, where children are expected to draw on and apply multiple concepts to address or approach a challenge
- Modelling of all skills and approaches
- Modelling and sharing of efficient and accurate application of methods
- Opportunities to explore maths concepts/objectives at 'greater depth'
- Include all learners, providing relevant support for those with additional needs (educational, medical or otherwise)

Mathematical Language and Vocabulary

Maths vocabulary should form part of every lesson and it should be used in the correct way

in order to develop children's knowledge. Stem sentences should be used where appropriate. Teachers will refer to our Vocabulary Progression document, as well as the New National Curriculum and the glossary of terms, when planning for a new topic to ensure that they are teaching the children the correct mathematical terms and language. Children will be encouraged to use the correct mathematical language and terminology to discuss their mathematics and to explain their reasoning.

Approach to Calculations

New concepts are introduced by using a concrete, pictorial, abstract approach. A separate policy outlines how we at Uplands Junior School have agreed to teach calculations in the four rules of number. All calculations should follow the calculations policy, according to individual needs.

Homework

Across Lower School (Year 3-4) maths homework, with a focus on reasoning, will be set as part of our creative homework cycle. In Upper school (Years 5-6) learning from the daily maths lesson will be extended through homework activities. These activities will be focussed and will be referred to and valued in future lessons as stated in the school's homework policy. This will begin from the Spring Term onwards. All children are expected to learn their times tables as part of their weekly homework as this will be tested on a regular basis. The three-way partnership between parents, the school and the child, is essential to fully realising each child's potential in maths. Information can be found on the school's website.

Equal Opportunities

At Uplands Junior School we feel that all children, irrespective of gender, ability, ethnic or cultural origins, should have equal access to all parts of the curriculum and that teaching and learning is structured so that each child has every opportunity to realise personal potential within mathematics. The daily maths lesson is appropriate for all children through differentiation.

Children with Special Educational Needs and Individual Education Plans

Teachers will aim to include all children fully in their daily mathematics lessons. All children benefit from the emphasis on oral and mental work and watching and listening to other children demonstrating and explaining their methods. This is where mixed ability groupings will support children most. However, a child whose difficulties are severe, complex or whose mathematical understanding is over 2 years behind age related expectations for that child, will need to be supported with an individual programme in the main part of the lesson (as appropriate).

Pupil Premium Children

Building Belief – we will provide a culture across all levels where:

- Staff believe in all children and know their barriers to learning
- There are 'no excuses' made for performance
- Staff adopt a 'solution-focused' approach to overcoming barriers

- Staff support children to develop mind sets towards learning (see pupil premium policy)
- The attainment and progress of pupil premium children will be monitored as a separate group and a termly basis.

Catering for 'More Able' Children

Every Maths lesson should show progress and/or help children to deepen their understanding and should build on prior knowledge, therefore all children should be challenged. Pupils are encouraged to make rich connections across mathematical ideas to develop deep interconnected understanding. Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems rather than accelerated onto new content. These activities are added to 'Challenge Boxes' which are placed within each classroom. When working with the whole class, teachers will direct some questions towards the more able children to challenge these children and maintain involvement. If the children are exceptionally gifted, they may follow an individualised programme.

Working walls and Memory books

In order to further support children, Maths Working Walls and Maths Memory Books are to be used as part of the daily lesson. Key concepts, methods and worked examples of questions will be recorded where they will be easily accessible to pupils in order to aid independent learning within the lesson as well as any future learning. Working Walls will be updated by the teacher/teaching assistant during the delivery of the lesson. Maths Memory Books will be completed by the children themselves. Children should be encouraged to refer back to both resources when completing independent activities.

Examples of things that could be included:

- Formal calculation methods
- Key vocabulary and examples (square numbers, multiples, primes etc)
- Shape drawings and their properties
- Measures conversions
- Question stems for reasoning

Learning Support Programs/Intervention

Using tracking data, combined with teacher's knowledge of children's progress, children who are underachieving in Maths are identified and placed into support programs or intervention groups. These programs are intended to accelerate progress of individual children, identifying gaps in learning and providing targeted support for these children. Teachers will pre-teach objectives that are to be taught in order to give children a head start and confidence when faced with new learning. These programs are led by class teachers or teaching assistants and visiting teachers under the guidance of the class teacher. Such interventions will take place outside of the normal maths lesson. These interventions include:

- Maths Intervention in Year 3,4,5 & 6
- Team teaching
- Smaller teaching groups
- Wave 3

- Catch up
- Tuition

Additional support may be given in the following ways: further use of representations, careful directed questioning, additional time or activities to consolidate understanding and use of flexible grouping.

The Role of the Teaching Assistant

All adults working with the children should be used effectively in order to develop the children's knowledge and they should be aware of the focus children for the class where appropriate. Teaching assistants are planned for within the teacher's weekly maths plan. During the mental session, the TA will sit near targeted pupils who have been identified as needing extra support or encouragement so that they can participate to the best of their ability and gain the most from the lesson. Within the main part of the lesson, the TA will not necessarily work with the same group everyday but this will be identified in the teacher's planning. During the plenary, the TA will again support targeted children. The teacher will make time to converse with the TA to assess children's achievement within that lesson.

Assessment

Assessment is continuous and ongoing. Approach and response to reasoning activities should improve term on term, with the expectation that by the end of the year, children are happy to accurately define and use mathematical vocabulary introduced by their teacher, as well as complete stem sentences to complete mathematical statements or reasoning.

Teaching and support staff should also see this period of implementation as an opportunity to highlight and further improve concepts that are received well and have clear impact on progress and learning, while also analysing and evaluating practice that needs to be addressed, reviewed or replaced.

Assessments will take place at three connected levels: short term, medium term and long term. These assessments will be used to inform teaching in a continuous cycle of planning, teaching and assessment.

1. **Short Term Assessments**
   There should be assessment opportunities in every lesson. Short term assessments will be an informal part of every lesson to check pupils understanding, this will assist in adjusting day-to-day lesson plans. Teachers will gain this information through observations, questioning, guided work and marking. Children will be encouraged to self-assess according to 'Age Related Expectations' located in their maths books in the form of target cards.
2. **Medium Term Assessments**
   Medium term teacher assessments will be made on every pupil against 'Age Related Expectations'. These assessments will be discussed with SLT and used to inform any relevant intervention and parents' evening discussions. A formal assessment may be used to help inform teacher assessments.
3. **Long Term Assessments**

Long term assessments will take place towards the end of the school year to assess and review children's progress. This will be completed through compulsory National Curriculum Mathematics tests in Year 6 and supplemented by new curriculum tests for year 3,4 & 5. Teacher assessments and test results will be reported to parents, secondary schools, SLT and the next class teacher.

Attainment and Progress

Attainment and progress are measured through the assessment process outlined above. Pupils progress meetings are held within team meetings on a regular basis and middle managers report to SLT. This information is used by the maths subject leader to amend any intervention groups and ensure that those children who are not working at age related expectations are provided with the support they need.

This policy was reviewed in April 2022 and will be reviewed again in April 2024 in response to any changes or advice given by the DfE, especially regarding assessment procedures.

Signed by

Headteacher **Date:**

Next review date: April - 2024